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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

<i>Customer No.</i>	23643	}	
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<i>Confirmation No.:</i>	5416	}	
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<i>Application No.:</i>	10/573,937	}	
		}	
<i>Invention:</i>	Tower Reactor and Use Thereof for the Continuous Production of High Molecular Weight Polyesters	}	Electronically Filed April 13, 2009
		}	
<i>Inventor:</i>	Schulz Van Endert et al.	}	
		}	
<i>Filed:</i>	September 13, 2006	}	
		}	
<i>Attorney</i>		}	
<i>Docket:</i>	37317-79570	}	
		}	
<i>Examiner:</i>	Natasha E. Young	}	

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

These remarks are submitted in response to the January 13, 2009 official action. In that action, the Examiner rejected claims 1-22 for “obviousness-type” double patenting. The Examiner relied upon the combination of Schulz Van Endert U. S. Patent 7,259,227 (hereinafter Schulz Van Endert) and May U. S. Patent 2,761,889 (hereinafter May). The Examiner also rejected claims 1-23 and 28-30 under 35 U. S. C. § 103. The Examiner relied upon the combination of Schulz Van Endert WO 03/042278 (the Examiner relies upon its English language equivalent U. S. Patent 7,115,701 -- as 7,115,701 issued on the parent of Schulz Van Endert and thereby has identical disclosure, Schulz Van Endert WO

03/042278 and U. S. Patent 7,115,701 are also referred to hereinafter as Schulz Van Endert) and May to support this rejection. The Examiner rejected claims 24-27 under 35 U. S. C. § 103. The Examiner relied upon the combination of Schulz Van Endert, May and Davison U. S. Patent 5,469,914 (hereinafter Davison) to support this rejection.

As noted in the September 25, 2008 response to the June 26, 2008 official action, there exist major, unobvious structural differences between the claimed tower reactor and the reactor described in Schulz Van Endert. Specifically, the tower reactor of the present claims is built “upside-down” from the tower reactor of Schulz Van Endert. This construction confers the following advantages noted in the present application, which are neither disclosed nor suggested by Schulz Van Endert, May or Davison:

- (1) The product discharge from the entire tower reactor is by gravimetric flow, eliminating the need for a pump;
- (2) Long external pressure lines for the conveyance of monomer into the reactor are eliminated;
- (3) The requirement for heating of the upper reactor cover is eliminated, resulting in operational cost savings;
- (4) Reactor vapors can be used partially for heating the reaction product in the hydrocyclone;
- (5) A uniform pressure incline prevails across the entire reactor, permitting the reactor to be constructed with reduced wall material thickness.

As clearly demonstrated by Applicant, the construction of the tower reactor in the above-mentioned manner leads to advantages that are synergistic as mentioned above. The total of these advantages which are due to the “upside-down” arrangement of the hydrocyclone would not have been foreseeable for the person skilled in the art. Therefore, applicant still submits that not only is 35 U. S. C. § 103 unobviousness over the cited prior art established, but also that obviousness-type double patenting obviousness is rebutted.

Improvement of the tower reactor of Schulz Van Endert is a goal of the present claimed invention; hence the “upside down” implementation. Schulz Van Endert describes the hydrocyclone as being aligned in the lower third of the tower reactor. However, the Schulz Van Endert arrangement of the hydrocyclone has, *inter alia*, the following drawbacks:

- (1) The presence of long external pressure lines (indicated by numeral 4 in Schulz Van Endert) is essential. This implies further that these pressure lines need to be thermally insulated, since the crude products have already been tempered in the heat

exchanger;

(2) Furthermore, the presence of a pump to discharge the crude product mixture to the upper third of the tower reactor is indicated;

(3) Further, due to the relatively high pressures, relatively thick wall materials of the entire tower reactor are required.

The present claimed arrangement overcomes these technical obstacles of Schulz Van Endert and any 35 U. S. C. 103 obvious combination of Schulz Van Endert with May and/or Davison by arranging the hydrocyclone in the upper third of the tower reactor.

May does not even hint of such a solution to these technical obstacles, including, for example, the sufficiency of thinner wall materials due to the pressure reduction during the polymerization process within a tower reactor. Certainly Davison does not hint of such a solution to these technical obstacles.

Furthermore, the cyclone as described by May addresses a different purpose, namely, the removal of solids from hydrocarbons by gravity settling downwardly through dip leg (see, for example, May, col. 2, 1. 50). In the present invention, the hydrocyclone is used for degassing the crude products.

To summarize then, Schulz Van Endert teaches a reactor which is “upside down” to the reactor of the present application, and thus *undisputedly teaches away* from constructing the reactor as claimed. May contains no teaching which overcomes or cures this glaring shortcoming in the teachings of Schulz Van Endert. Davison does not either, as Davison does not teach a reactor at all, only a heat exchanger. Thus, Applicant believes that in view of the above reasons, the present claimed invention would not have been obvious over the cited Schulz Van Endert, May and Davison references, either taken alone or in the suggested, or any other, 35 U. S. C. § 103 obvious combination.

The Commissioner is hereby authorized to charge any fees which may be necessary to constitute this a timely response to the January 13, 2009 official action to Applicants' undersigned counsel's deposit account 10-0435 with reference to file 37317-79570.

Respectfully submitted

A handwritten signature in black ink, appearing to read "Richard D. Conard", written in a cursive style.

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